

---

# TECHNICAL MEMORANDUM



---

To: Jerry Middel, CTUIR

From: John Gaffney, P.E. <sup>1</sup> Emily Alcott, CE, PWS <sup>2</sup>

Date: June 21, 2023 Project: Túuši Wána RM14-17 Floodplain, River, & Fish Habitat Restoration Project

Re: Technical Comments on Preliminary Design Plan

---

## Project Design Plan, Preliminary

Given the very large spatial scale of the Túuši Wána project<sup>3</sup> and the considerable amount of estimated implementation costs this preliminary project design plan provides a strategic design phase and chronological outlook.

### ***Design Phasing***

With the relaxation of many constraints, that had been related to the much narrower conservation easement in negotiations during development of the conceptual and preliminary designs completed to-date, the project design treatments will be refined and expanded to match the increased width of the conservation easement. This design area expansion will rely and build upon prior design efforts to increase the scope and scale of the project and build upon new opportunities presented by the expanded conservation easement. This process will allow the design team to incorporate prior comments from the landowner, project partners, and funders to understand the new designs and provide their input into these expanded designs. Expanding the prior conceptual design does not mean starting entirely over, much of the foundational material collected and developed in the site assessment, conceptual, and preliminary design phases will continue to be valuable in informing the design direction.

Following development, presentation, and multi-party review of the expanded conceptual designs the project will expand its Preliminary 30% design phase to match the expanded conservation easement. From here, given the large spatial scale of the project, it is expected that the project will move forward in phases to Permit-level designs (60%). The Permit-level design phase will likely parse the project into multiple work areas consistent with the Spatial Phasing (see below). This phasing will allow for more adaptability through the course of implementation in response to early performance observations, innovations in restoration treatment details, changes in construction market conditions, funding levels, and other factors. Ultimately, the spatial extent permitting decision will be made by the Tribes in consultation with the agencies and the landowner as the Permit-level designs are developed.

---

<sup>1</sup> Inter-Fluve, Túuši Wána Design Project Design Engineer

<sup>2</sup> Inter-Fluve, Túuši Wána Design Project, Project Manager, Lead Ecologist & Fluvial Geomorphologist .

<sup>3</sup> Project extent, as defined by the latest draft conservation easement extent includes the entire valley bottom from River Mile 17.2 to 14.8.

Following development, presentation, and multi-party review of the Permit-level designs the project will move into the final design phase. Each work area final design package will follow from the Permit-level design intents.

As each work area design is finalized it will be moved into the construction/implementation phase. During the construction/implementation phase contractor bids will be solicited, a qualified best value contractor will be selected by the Tribes, and then the contractor, the Tribes, and the design consultant will proceed in the traditional Contractor <--> Owner <--> Engineer relationship to see the project through construction as intended while being able to accommodate changes in conditions and other circumstances. While one work area, or set of work areas, is in construction the design for other work areas could be advanced through final designs. This staggering of construction and design finalization would continue until work in the entire project extent is completed. It may also be the case that some work areas will be part of multiple final design packages and construction efforts (e.g., large wood and earthwork may be part of an initial effort followed by plantings in the following year in the same work area), see *Chronological Phasing* below for more information.

### **Project Design Philosophy, Preliminary**

Given the valley bottom wide and over 2 mile long project extent the project design philosophy is one of maximizing restoration of achievable pre-euro-settlement conditions within the remaining current biophysical, administrative, social, and economic constraints. The restoration philosophy also seeks to balance the interests of more immediate habitat and ecosystem gains with more long-term natural process based and sustainable strategies. In connection to this more general project design philosophy, a particular presupposition by project reviewers will be thoroughly investigated and addressed as the design team expands the conceptual and preliminary design phases. This presupposition is twofold 1) the current valley bottom surface is the pre-euro-settlement floodplain and 2) that the channel has incised below its pre-euro-settlement profile. These presuppositions are expressed in two of the SRFB Tech Review Panel comments quoted below:

“...the opportunity now exists to develop designs that more fully engage the floodplain and side channels, and to reverse channel incision.”

“The phase 1 design set needs a defined approach and more detail about how to raise the water level to engage the floodplain. A several foot water level lift could inundate hundreds of acres providing tremendous habitat improvement. Please elaborate on methods to engage this expansive yet perched floodplain.

Please discuss alternative and methods to re-engage the floodplain that have been evaluated so far. Are there methods/design approaches that do not involve extensive wall-to-wall bulldozing, and instead focus on raising the river bed rather than lowering the floodplain?

Discuss expected topsoil preservation, and proposed native plant re-establishment and water table outcomes that can be expected from different design approaches.”

The narrower easement extent in negotiations during development of the conceptual and preliminary designs completed to-date put a considerable constraint on considering elevating of the river bed and

hydraulic grade lines as a means to increase floodplain extents. Now that this constraint has been lifted the approach of elevating of the river bed and hydraulic grade lines will be thoroughly considered and the validity of the underlying presupposition (i.e., the current valley bottom surface is the pre-euro-settlement floodplain) supporting this approach will be tested. Testing and investigation to determine if the current valley bottom surface is the pre-euro-settlement floodplain will likely include: additional test pits and trenches to look for channel bed materials above the current channel profile, further review of available historical information and accounts, dating/aging of materials and trees on and in the valley sediments, and consultation with regional and topic experts. Should it be found that the current valley bottom surface is the pre-euro-settlement floodplain it's our understanding from multiple review comments that the aim should be to elevate this ~2 mile reach and establish the necessary measures to transition the profile at the downstream and upstream end of the project. At this time the project approach will not assume that other upstream or downstream profile elevations would be completed.

### **Project Phasing Plan, Preliminary**

Given the very large spatial scale of the Túuši Wána project and the considerable amount of estimated implementation costs this preliminary project phasing plan provides a strategic spatial and chronological outlook.

#### ***Spatial Phasing***

The over 2 mile long and nearly 400 acre project area will be phased to optimize restoration potential and allow for the transition of the valley bottom from agriculture to a natural riparian corridor. The spatially phases are generally as follows with concurrent work possible:

1. Demonstration Work Area near the homestead (*RM 17.2 to 16.9*). Work within the OHW including; large wood, bank/channel grading, and plantings within large wood.
2. Lower Third of the project length (*RM 15.8 to 14.9*). Work outside the OHW including; floodplain grading/channels, floodplain large wood, plantings (including plantings for future phase harvest), and seeding.
3. Upstream Third of the project length (*RM 16.9 to 16.5*). Work within the OHW including; large wood and bank/channel grading.
4. Lower Third of the project length (*RM 15.8 to 14.9*). Work within the OHW including; large wood, bank/channel grading, and plantings within large wood.
5. Middle Third of the project length (*RM 16.5 to 15.8*). Work outside the OHW including; floodplain grading/channels, floodplain large wood, plantings, and seeding.
6. Middle Third of the project length (*RM 16.5 to 15.8*). Work within the OHW including; large wood, bank/channel grading, and plantings within large wood.
7. Demonstration Work Area near the homestead (*RM 17.2 to 16.9*). Work outside the OHW including; floodplain grading and berm removals, floodplain large wood, plantings, and seeding.

8. Upstream Third of the project length (*RM 16.9 to 16.5*). Work outside the OHW including; floodplain grading and berm/pond removals, floodplain large wood, plantings, and seeding.

### ***Chronological Phasing***

The total duration of the project is expected to be at least 4 years, with adaptive management and maintenance continuing on for at least another 10 years. In that time the project actions will generally be phased chronologically within each of the spatial phases as follows:

1. Invasive vegetation treatments – year 1 (2024)
2. Earthwork – year 2 (2025)
3. Large wood installations – year 2 (2025)
4. Plantings – year 2 and 3 (2025, 2026)
5. Seeding – year 2 (2025)

Planting maintenance and follow-up invasive vegetation treatments – year 3 and beyond